WHAT IS CLAIMED IS:

1. An automated first dimensional electrophoresis separation apparatus comprising:

an electrophoresis assembly supporting a plurality of gel tubes containing an electrophoretic gel, each of said tubes having a first open end and second open end;

a supply magazine for containing a plurality of sample containers, each sample container containing a sample to be subjected to electrophoresis;

a transferring device for sequentially removing a sample from a preselected sample container and transferring said sample to a first end of a respective gel tube, said transferring device including a pipette that is movable in three dimensions between said supply magazine and a gel tube of said electrophoresis assembly; and

a microprocessor operatively connected to said transferring device to automatically control the transfer of said sample to said respective gel tubes.

2. The apparatus of claim 1, wherein said transferring device includes a first horizontal support extending in a first longitudinal direction with respect to a longitudinal dimension of said assembly, and an arm coupled to said first support and extending in a second direction, and wherein said arm is movable along said first support in said first direction.

3. The apparatus of claim 2, wherein said pipette is coupled to said arm and movable along said arm in said second direction.

4. The apparatus of claim 3, wherein said pipette is mounted for reciprocal movement along a vertical axis in a vertical direction with respect to said assembly.

5. The apparatus of claim 2, wherein said electrophoresis assembly is spaced from said ~~sample~~ supply magazine in said first direction, and wherein said gel tubes are aligned in a row extending in said second direction.

6. The apparatus of claim 1, wherein said electrophoresis assembly comprises a plurality of electrophoresis tanks, each of said tanks having a plurality of said gel tubes arranged in rows oriented in said second direction.

7. The apparatus of claim 1, further comprising a substantially horizontal cover coupled to said apparatus wherein said electrophoresis assembly is positioned below said cover.

8. The apparatus of claim 7, wherein said cover includes a plurality of apertures aligned with said gel tubes in said electrophoresis assembly.

9. The apparatus of claim 8, wherein said cover has a top surface, a bottom surface, and a guide assembly coupled to said bottom surface for positioning said electrophoresis device and said gel tubes in a selected position with respect to said apertures in said cover.

10. The apparatus of claim 9, wherein said guide assembly comprises a pair of spaced apart parallel guide rails and a stop member positioned at one end of said guide rails, said stop member being positioned to align said gel tubes with said apertures in said cover ~~member~~.

11. The apparatus of claim 8, wherein said cover has a top surface with a frustoconical recess surrounding each of said apertures in said cover for guiding said pipette through said apertures.

12. The apparatus of claim 9, wherein said electrophoresis assembly includes a tank for containing a first buffer solution, a rack supporting said gel tubes and being positionable in said tank, said rack having a top surface with a well for containing a second buffer solution, said rack further having a plurality of passages for receiving said gel tubes and positioning said first end of said gel tubes in said well and said second end in said first buffer solution.

13. The apparatus of claim 12, wherein said rack includes a first electrode for contacting said first buffer solution and being connected to a first electrical contact, said rack including a second electrode for contacting said second buffer solution and being connected to a second electrical contact, and wherein said guide assembly includes first and second electrical contacts for contacting said first and second electrical contacts of said rack for supplying electrical current to said electrodes.

14. The apparatus of claim 1, wherein said electrophoresis assembly includes a plurality tanks, each of said tanks having a rack

supporting a plurality of said gel tubes in a row, and wherein said apparatus includes a horizontal cover member having a plurality of spaced apart rows of apertures, a plurality of guide members coupled to said cover member and positioned between said rows for positioning said tanks below said cover member whereby said apertures in said cover member are aligned with a respective gel tube.

15. An automated first dimension electrophoresis separation assembly comprising:

an electrophoresis assembly including at least one tank and a plurality of gel tubes vertically supported in said tank and arranged in a row, said gel tubes having an open top end;

a supply magazine for containing a plurality of sample containers, each of said sample containers containing a liquid sample;

a movable arm movable in a substantially linear horizontal first direction between said supply magazine and said electrophoresis assembly; and

a movable pipette coupled to said arm and being movable along a longitudinal dimension of said movable arm in a second direction, said pipette further being movable in a vertical direction, with respect to said movable arm, wherein said pipette is movable from a first position for removing a sample from a sample container to a second position for dispensing a sample in a respective gel tube.

16. The assembly of claim 15, further comprising a first support member extending in a longitudinal dimension of said assembly, and wherein said movable arm is coupled to said first support member and being movable along said first support member.

17. The assembly of claim 16, wherein said movable arm extends substantially perpendicular to said first support member.

18. The assembly of claim 16, comprising a first drive motor operatively connected to said movable arm for moving said movable arm along said first support member.

19. The assembly of claim 15, further comprising a microprocessor operatively coupled to said movable arm and said pipette for operating said movable arm and said pipette.

20. The assembly of claim 18, further comprising a second drive motor operatively connected to said pipette for moving said pipette in a vertical direction with respect to said movable arm.

21. The assembly of claim 20, further comprising a support rod having a longitudinal axis and a lower end, said support rod being coupled to said movable arm and being movable in said vertical direction, wherein said pipette is coupled to said lower end of said support rod.

22. The assembly of claim 21, wherein said second drive motor is operatively connected to said support rod for moving said support rod in said vertical direction with respect to said movable arm.

23. The assembly of claim 22, wherein said movable arm includes a longitudinal track and a carriage movable along said track,

said second drive motor and said support rod being operatively connected to said carriage for movement along said track.

24. The assembly of claim 15 further comprising a stationary cover member positioned above said electrophoresis assembly, said cover assembly having a top surface and a bottom surface and a plurality of apertures extending between said top surface and said bottom surface, said apertures being arranged in a row and being aligned with said gel tubes.

25. The assembly of claim 24, wherein said row of gel tubes and said row of said apertures extend substantially parallel to said longitudinal dimension of said movable arm.

26. The assembly of claim 25, wherein said cover member includes a guide assembly coupled to said bottom surface of said cover member.

27. The assembly of claim 26, wherein said guide assembly comprises a pair of spaced apart guide rails for positioning said electrophoresis assembly and aligning said gel tubes with said apertures in said cover member.

28. The assembly of 27, further comprising a stop member extending between said guide rails at one end thereof.

29. The assembly of claim 28, further comprising a pair of electrical contacts coupled to said stop member for supplying an electric current to said electrophoresis assembly.

30. The apparatus of claim 29, wherein said electrophoresis assembly includes a rack supporting said gel tubes and being positionable in said tank, said rack having a top surface with a well for containing a second buffer solution, said rack further having a plurality of passages for receiving said gel tubes and positioning said top end of said gel tubes in said well.

31. The apparatus of claim 30, wherein said rack includes a first electrode for contacting said first buffer solution and being connected to a first electrical contact, said rack including a second electrode for contacting said second buffer solution and being connected to a second electrical contact, and wherein said first and second electrical contacts of said stop members are positioned for contacting said first and second electrical contacts of said rack for supplying electrical current to said electrodes.

32. The apparatus of claim 15, wherein said electrophoresis assembly includes a plurality tanks, each of said tanks having a rack supporting a plurality of said gel tubes in a row, and wherein said apparatus includes a horizontal cover member having a plurality of spaced apart rows of apertures, a plurality of guide members coupled to said cover member and positioned between said rows to position said tanks below said cover member whereby said apertures in said cover member are aligned with a respective gel tube.

33. An apparatus for loading a biological sample in to an electrophoresis device, said apparatus comprising:

a vertical support;

a stationary cover member having a top surface, a bottom surface and being coupled to said support, said cover member having a plurality of apertures arranged in a plurality of spaced apart rows; said bottom surface of said cover member being positioned to receive a plurality of electrophoresis devices;

a supply magazine for containing a plurality of sample containers containing a biological sample;

a robotic arm movable between said supply magazine and a selected aperture of said cover member, said robotic arm having a pipette for withdrawing a sample from a sample container and delivering said sample to said electrophoresis device below said cover member; and

a microprocessor operatively connected to said robotic arm for operating said robotic arm and said pipette.

34. The apparatus of claim 33, further comprising a first horizontal support extending in a first longitudinal direction of said assembly, wherein said robotic arm is coupled to said first horizontal support and extends therefrom, and wherein said robotic arm is movable along said first horizontal support in said first longitudinal direction.

35. The apparatus of claim 34, wherein said pipette is movable along said robotic arm in a longitudinal direction with respect to said robotic arm.

36. The apparatus of claim 35, wherein said pipette is mounted for reciprocal movement along a vertical axis in a vertical direction substantially perpendicular to a plane of said cover member.

37. The apparatus of claim 33, further comprising a pair of spaced apart parallel guide rails and a stop member positioned at one end of said guide rails, wherein said guide rails and said stop member are coupled to said bottom surface of said cover member, said stop member and guide rails being positioned to align said gel tubes of a respective electrophoresis device with said apertures in said cover member.

38. The apparatus of claim 33, wherein each of said apertures in said cover member have a frustoconical top surface for guiding said pipette through said apertures.

39. The apparatus of claim 33, wherein each of said electrophoresis devices includes a tank for containing a first buffer solution, a rack supporting a plurality of gel tubes and being positionable in said tank, said rack having a top surface with a well for containing a second buffer solution, said rack further having a plurality of passages for receiving said gel tubes and positioning a top end of said gel tubes in said well.

40. The apparatus of claim 39, wherein said rack includes a first electrode for contacting said first buffer solution and being connected to a first electrical contact, said rack including a second electrode for contacting said second buffer solution and being connected to a second electrical contact, and wherein said guide assembly includes first and second electrical contacts for contacting said first and second electrical contacts of said rack for supplying electrical current to said electrodes.

41. The assembly of claim 34, comprising a first drive motor operatively connected to said robotic arm for moving said robotic arm along said first horizontal support ~~member~~.

42. The assembly of claim 41, further comprising a second drive motor operatively connected to said pipette for moving said pipette in a vertical direction with respect to said robotic arm.

43. The assembly of claim 42, further comprising a support rod having a longitudinal axis and a lower end, said support rod being coupled to said robotic arm and being movable in said vertical direction, wherein said pipette is coupled to said lower end of said support rod.

44. The assembly of claim 43, wherein said second drive motor is operatively connected to said support rod for moving said support rod in said vertical direction with respect to said movable arm.

45. The assembly of claim 44, wherein said robotic arm includes a longitudinal track and a carriage movable along said track, said second drive motor and said support rod being coupled to said carriage for movement along said track.